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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/990,640	11/21/2001	Chien-Wei Li	H0001160	3688

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EXAMINER

MCNEIL, JENNIFER C

ART UNIT	PAPER NUMBER
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1775

DATE MAILED: 11/25/2003

8

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/990,640

Applicant(s)

LI ET AL.

Examiner

Jennifer C McNeil

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1775

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 September 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 11, 13, 14, 18-35 and 41-51 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2-4, 11, 22, 25-45 and 51 is/are allowed.
- 6) ☒ Claim(s) 1, 13, 18-20, 23, 24, 46-48 and 50 is/are rejected.
- 7) ☒ Claim(s) 14, 21, 49 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

Claim 21 is objected to because of the following informalities: line 6 should read $-Al_2O_3-$.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 23 and 24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 23 includes tantalum oxide and lanthana, and further may include an oxide of lanthana. Does applicant intend to include an embodiment that may include more than 10 mol% lanthana? Please clarify.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 13, 18, 48, and 50 are rejected under 35 U.S.C. 102(e) as being anticipated by Skoog et al (US 6,210,791). Skoog teaches a thermal barrier coating for a silicon containing substrate. The coating includes a diffuse reflective barrier coating having a composition of alumina particles at a level of 5-85 wt%, and 1-40 wt% of other particles such as tantalum oxide. The reflective barrier is considered crystalline as the particles have a defined crystal size and are formed by a method disclosed by applicant,

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i.e. spray (col. 8, lines 5-15). Regarding claim 50, the substrate may be silicon nitride or silicon carbide.

Regarding the lack of CaO presence, Skoog does not teach that CaO is present in the reflective barrier, and therefore is considered to be absent.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 19, 20, 46, and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Skoog et al (US 6,210,791) in view of Li et al (US 6,582,779). Skoog teaches a thermal barrier coating having a diffuse reflective barrier coating as discussed above. Skoog does not teach alternative methods for deposition of the coating onto the substrate. Li teaches a protective coating for silicon nitride components including a tantalum oxide outer layer. Li teaches that the layer may be applied by a high temperature plasma flow; the ceramic coating becomes molten, and is subsequently quenched and solidified. The method taught by Li exemplifies a known manner in the art of turbines to deposit a coating onto a substrate with sufficient bonding for use in highly corrosive environments. It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the coating of Skoog in the manner taught by Li to provide a coating with sufficient adhesion to be used in highly corrosive environments. Regarding preheating the mixture, application via plasma heats the mixture. Regarding claims 46 and 47, the thickness of the layer of Skoog may be 0.001-0.006 inches thick (1-6 mil; 25.4-152 microns), and the alumina may be present at concentrations of 30.2 and 22 wt%. These values are considered to overlap with applicant's claimed ranges.

Response to Arguments

Applicant's arguments filed September 22, 2003 have been fully considered but they are not persuasive. Regarding the Skoog rejection, applicant argues that Skoog does not teach a crystalline coating. As stated above, the coating of Skoog is considered crystalline as it incorporates particles having a defined crystalline structure. Applicant also argues that the Skoog reference does not teach a coating composition having concentrations like that of the invention. This argument is not commensurate with the limitations of the claims. Claim 1 has no limitations of the concentrations of the materials in the layer.

Regarding claim 13, applicant has amended the claims to include a protective coating of a mixture of tantalum oxide and an additive of at least one of alumina and lanthana, and wherein the lanthana concentration is in the range of 1-10 mol%. Because alumina is a choice for the additive, and there is no requirement that lanthana be present, Skoog is considered to meet all the limitations of the claim. The same type of amendment was made to claim 18. There is no requirement that lanthana is the additive that is added to the tantalum oxide. The rejection of claims 19 and 20 is held over Skoog and Li for the reasons stated above. The rejection over Skoog and Li is applied to claims 46 and 47 as they were previously applied to claims 16 and 17. New claims 48 and 50 are rejected over Skoog for reasons stated above.

Applicant's arguments and amendments have overcome the 102(b) rejection over Matsudaira '355.

Allowable Subject Matter

Claims 2-4, 11, 21, 22, 25-35, 41-45, and 51 are allowed.

Claims 14 and 49 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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Claims 23 and 24 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer C McNeil whose telephone number is 703-305-0553. The examiner can normally be reached on 9AM-6PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on 703-308-3822. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



JCM
November 23, 2003